CLAIMS

1) A method of controlling a clutch (7) powered by a hydraulic actuator (15) comprising a work chamber (28), which is filled with a fluid and connected to a solenoid valve (25) for selective connection to a drain tank (19) for draining the fluid, or to a storage tank (23) for accumulating pressurized fluid; the method providing for generating a target value (Pos*) of the position of the hydraulic actuator (15), measuring an actual value (Pos) of the position of the hydraulic actuator (15), and calculating a control signal (I*) for controlling the solenoid valve (25) by feedback control of the position of the hydraulic actuator (15); and the method being characterized by generating a target value (Put*) of the pressure of the fluid inside the work chamber (28), estimating an actual value (Put) of the pressure of the fluid inside the work chamber (28), and calculating the control signal (I*) using both feedback control of the position of the hydraulic actuator (15), and feedback control of the pressure of the fluid inside the work chamber (28).

2) A method as claimed in Claim 1, wherein the actual value (Put) of the pressure of the fluid inside the work chamber (28) is estimated by a pressure measurement inside the work chamber (28).

3) A method as claimed in Claim 1, wherein the actual value (Put) of the pressure of the fluid inside

the work chamber (28) is estimated by a pressure measurement inside a pipe (27) extending between the work chamber (28) and the solenoid valve (25) and connected permanently to the work chamber (28).

4) A method as claimed in Claim 3, wherein the pressure measurement is made by a sensor (35) located inside the pipe (27) and close to the work chamber (28).

5) A method as claimed in Claim 1, wherein the target value (Put*) of the pressure of the fluid inside the work chamber (28) is generated as a function of the actual value (Pos) of the position of the hydraulic actuator (15), and of the target value (Pos*) of the position of the hydraulic actuator (15).

6) A method as claimed in Claim 5, wherein a forecast value (P1) predicting the value of the pressure of the fluid inside the work chamber (28) is calculated; the target value (Put*) of the pressure of the fluid inside the work chamber (28) being generated as a function of the actual value (Pos) of the position of the hydraulic actuator (15), of the target value (Pos*) of the position of the hydraulic actuator (15), and of the forecast value (P1).

7) A method as claimed in Claim 6, wherein a target value (Vel*) of the speed of the hydraulic actuator (15), and a target value (Acc*) of acceleration of the clutch are generated; the forecast value (P1) being generated as a function of the actual value (Pos) of the position of the hydraulic actuator (15), of the target value (Vel*)

of the speed of the hydraulic actuator, and of the target value (Acc*) of acceleration of the clutch.

8) A method as claimed in Claim 1, wherein a target value (Vel*) of the speed of the hydraulic actuator (15) is generated, an actual value (Pt) of the pressure of the fluid in the drain tank (19) is estimated, and an actual value (Pp) of the pressure of the fluid in the storage tank (23) is measured; the control signal (I*) being calculated as a function of the actual value (Put) of the pressure of the fluid inside the work chamber (28), of the target value (Put*) of the pressure of the fluid inside the work chamber (28), of the difference between the target value (Pos*) and actual value (Pos) of the position of the hydraulic actuator (15), of the target value (Vel*) of the speed of the hydraulic actuator, of the actual value (Pt) of the pressure of the fluid in the drain tank (19), and of the actual value (Pp) of the pressure of the fluid in the storage tank (23).

9) A method as claimed in Claim 1, wherein the control signal (I*) represents a target value of the current circulating in an electric actuator of the solenoid valve (25); the electric actuator of the solenoid valve (25) implementing feedback control of the current circulating through the electric actuator itself.

10) A control unit (17) for controlling a clutch (7) powered by a hydraulic actuator (15) comprising a work chamber (28), which is filled with a fluid and connected to a solenoid valve (25) for selective connection to a

drain tank (19) for draining the fluid, or to a storage tank (23) for accumulating pressurized fluid; the control unit (17) comprising a reference generator (37) for generating a target value (Pos*) of the position of the hydraulic actuator (15), a first sensor (36) for measuring an actual value (Pos) of the position of the hydraulic actuator (15), and a controller (41) for calculating a control signal (I*) for controlling the solenoid valve (25) by feedback control of the position of the hydraulic actuator (15); and the control unit (17) being characterized by comprising a second sensor (35) for estimating an actual value (Put) of the pressure of the fluid inside the work chamber (28), and a regulator (40) for generating a target value (Put*) of the pressure of the fluid inside the work chamber (28); the controller (41) calculating the control signal (I*) using both feedback control of the position of the hydraulic actuator (15), and feedback control of the pressure of the fluid inside the work chamber (28).

11) A control unit (17) as claimed in Claim 10, wherein a pipe (27) extends between the work chamber (28) and the solenoid valve (25), is connected permanently to the work chamber (28), and houses the second sensor (35) close to the work chamber (28).

12) A control unit (17) as claimed in Claim 11, wherein the pipe (27) is defined by a flexible portion (31) connecting the solenoid valve (25) to a connecting block (32) integral with a housing (8) of the clutch (7),

and by a rigid portion (33) connecting the connecting block (32) to the work chamber (28).

13) A control unit (17) as claimed in Claim 10, wherein the regulator (40) generates the target value (Put*) of the pressure of the fluid inside the work chamber (28) as a function of the actual value (Pos) of the position of the hydraulic actuator (15), and of the target value (Pos*) of the position of the hydraulic actuator (15).

14) A control unit (17) as claimed in Claim 10, and comprising a computing block (38) for calculating a forecast value (P1) predicting the value of the pressure of the fluid inside the work chamber (28); the regulator (40) generating the target value (Put*) of the pressure of the fluid inside the work chamber (28) as a function of the actual value (Pos) of the position of the hydraulic actuator (15), of the target value (Pos*) of the position of the hydraulic actuator (15), and of the forecast value (P1).